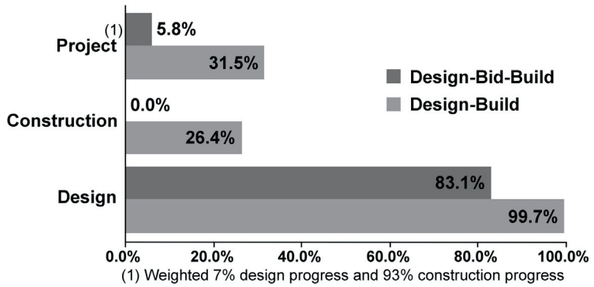
Project Efficiency

WSDOT has developed three efficiency measures to evaluate the effectiveness of design-build contracting:

- Schedule comparisons between design-bid-build and design-build projects
- Project Management and Oversight budgets as a percentage of total capital costs
- Contingency budget as a percent of total capital costs.

One of the most notable benefits of design-build contracting is shortened project schedules. The graph below compares a traditional project timeline with the current design-build project schedule. Because of simultaneous design and construction, the design-build timeline is almost 25% (23 months) shorter than a traditional schedule. To date, the project is right on schedule, though with high-risk activities nearing completion, we anticipate future schedule advances.

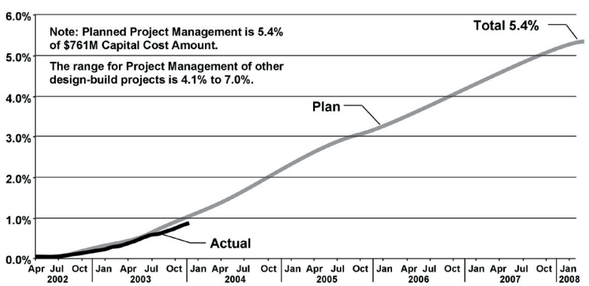
Design-Build vs. "Likely" Design-Bid-Build Schedule
Project Progress through December 2003



(1) Weighted 7% design progress and 93% construction progress

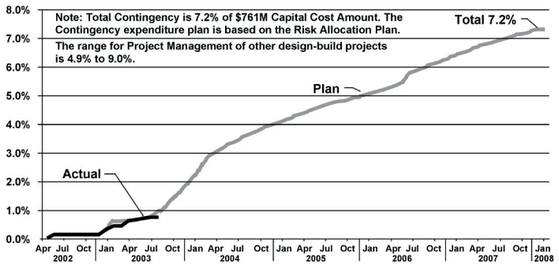
In the graph below, project management percentages are shown as a percentage of the total project capital costs through December 2003. The costs are projected to be 5.4% at project completion, falling in the mid-range level when compared to 4.1% for I-15 Corridor Mega project to 7% for the Cooper River Bridge project.

Project Management Comparison of Planned and Actual Expenditures
Cumulative Cost as a Percent of Capital Cost Amount



In the graph below, the project contingency budget is shown as a percentage of total project capital costs. The project contingency budget allows TNB project managers to aggressively address unanticipated costs, such as community requests, and cover WSDOT risk elements such as project scope changes. The costs are projected to be 7% at project completion, in the high range when compared to 4.9% for I-15 Corridor Mega project and 9% for the Florida St. John River Bridge project.

Project Contingency-Comparison of Planned and Actual Expenditures
Cumulative Percentage of Capital Cost Amount



Lessons Learned

WSDOT and TNC recently celebrated the project's one-year anniversary. WSDOT project staff provided a "first-year lessons learned" seminar to other WSDOT staff that will be involved in future design-build projects, and will continue sharing information with the following thoughts in mind:

- Continue to share lessons learned and incorporate them as appropriate in other WSDOT projects.
- Maintain efforts that are going well and support areas that need improvement.
- Continue to provide executive management support to help resolve issues.
- Continue to monitor project progress, execution, and efficiency.

Conclusions

Fifteen months into the Tacoma Narrows Bridge project, Washington state citizens are receiving a quality project on time and within budget. WSDOT considers design-build contracting to be an effective tool for delivering construction projects. The Legislative Oversight Committee will continue to monitor progress, execution and efficiency of the Tacoma Narrows Bridge Project.

Washington State
Department of Transportation

January 15, 2004

Tacoma Narrows Bridge Legislative Oversight Committee Report

The Legislative Oversight Committee (LOC), created by an amendment to the 2002 Public Private Initiatives in Transportation Act, monitors and reports on the progress, execution and efficiency of design-build projects -- in this case, the new Tacoma Narrows Bridge Project (TNB).

This folio highlights information contained in the LOC's first annual report to the Legislature on the progress of the Tacoma Narrows Bridge project. The entire LOC Legislative report may be obtained from WSDOT's Tacoma Narrows Bridge Office at (253) 534-4640.

For more information contact:

Linea Laird
lairdl@wsdot.wa.gov
Project Manager

Rick Singer
singerr@wsdot.wa.gov
Business Manager
Tacoma Narrows Bridge Office

Project Website:
www.tacomanarrowsbridge.com

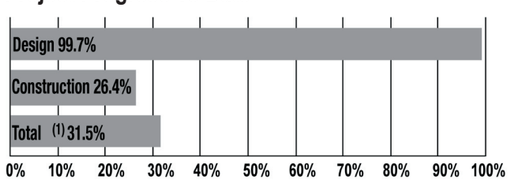
Project Office (Toll Free):
1-877-7-NARROW
(1-877-762-7769)

Project Progress

In the 15 months since WSDOT issued a Notice to Proceed to TNC and TransCore (toll facility operator), TNC has completed 31.5% of the overall project. Construction of some higher-risk items will be complete within the next several months.

In fact, the Tacoma caisson (or tower foundation) is scheduled to touch down on the Narrows seabed today.

Project Progress To Date



(1) Weighted 7% Design progress and 93% Construction progress

Tacoma Narrows Bridge Significant Milestones Achieved

2002

September: Project Design Began

October 5: Held Groundbreaking Ceremony

2003

Week of January 20: Roadway Construction Began

March 17 and April 16: Cutting Edges Launched (towed from Todd Shipyards to Port of Tacoma)

July 21 and August 18: Caissons Floated to Bridge (towed from Port of Tacoma to bridge site)

September 2 and 3: New 24th Street NW overpass opened to traffic and Stone Drive NW closed under bridge.

October 14: First concrete pour in excavated eastern anchorage site (Tacoma side) 2,100 cubic yards of concrete, largest pour on job to date.

October 31: New permanent westbound SR 16 exit to 24th Street NW and new permanent 24th Street NW on-ramp to westbound SR 16 opened to traffic.

December 15: Gig Harbor caisson placed on Narrows seabed - successful on first try


Begin Roadway Construction


Cutting Edge Launching


Caisson Float-Out


Completed 24th Street NW Overpass


Tacoma Anchorage Construction


Gig Harbor Caisson Touches Down

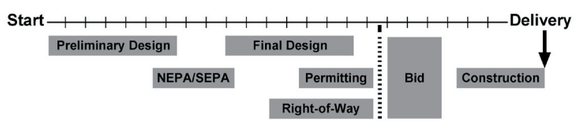
Design-Bid-Build Contracting

WSDOT's traditional contracting method is called design-bid-build, in which design work is completed prior to construction. In addition, right-of-way procurement, environmental permits, local agency agreements, and utility agreements are all either very well defined or in place prior to awarding the construction contract.

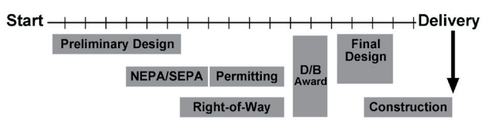
Design-Build Contracting

In design-build contracting, both project design and construction occur under one contract. WSDOT selects one company, or a group of companies working together, to fulfill contractual requirements for the entire project under a single contract. Preliminary design, right-of-way procurement, environmental permits, and local agency agreements are usually still completed prior to contract award, but final design is the responsibility of the design-builder rather than WSDOT. A design-build contractor may begin constructing a project before project design is complete, and the design-builder assumes risk associated with simultaneous work. Examples of risk include costs associated with project materials, weather delays, labor relations, site conditions, or any number of other issues. The graph shows typical timelines of design-bid-build and design-build projects.

Design-Bid-Build



Design-Build



Advantages of Design-Build

Design-build contracting promises innovative approaches that can lead to greater efficiencies in project delivery.
The main advantages are:

- Faster project delivery;
- Reduced conflicts with project owners;
- Reduced numbers of claims and change orders; and
- Smaller owner workforce needed.

Limitations of Design-Build

Design-build is not a panacea for all contracting challenges. Limitations to design-build contracting include:

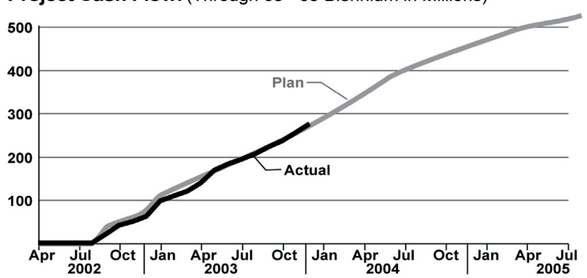
- Funding for all phases of work must be available at the beginning;
- WSDOT has less control over project details.
- The design-builder is free to maximize design efficiencies in the most cost-efficient way as long as performance and technical requirements are met.
- The transfer of project risk from WSDOT to the design-builder means higher contingencies in the contract price;
- The final product may not be defined when construction begins.
- If the public and interest groups are dissatisfied with the final design, it is more costly for WSDOT to modify it.

Cash Flow

The capital cost for the Tacoma Narrows Bridge project is $760.4 million. The graph shown below illustrates planned project cash flow vs. actual expenditures, and shows that actual project expenditures meet the contract expenditure plan. Financing costs and reserve debt service during construction brings the total projected cost of the project to $849 million.

Project Cost Summary (in Millions):	**Budgeted**	**Expended**
Design-Build Contract	615.0	266.9
Toll System Contract	9.2	1.2
WSDOT Oversight	41.0	6.7
Contingencies	54.7	4.1
Phase I Dev. Cost (UIW)	40.5	39.9
Total	760.4	318.8
Total Expended/Total Cost		**41.9%**

Project Cash Flow: (Through 03 - 05 Biennium in Millions)



Public Opinion Survey

WSDOT wants to evaluate public opinion and perception of this project. To assist with that effort, WSDOT hired a public relations firm to conduct a baseline public information survey identifying public awareness, opinions, and perceptions of the bridge project and of WSDOT. Six hundred surveys were completed.

Survey highlights indicate that:

- Virtually all residents surveyed were aware of the project.
- Most respondents felt they were adequately informed about the project.
- WSDOT can expect changes in travel patterns across the bridge due to construction and future tolls.
- Overall, opinions about the project are favorable.
- Over half the respondents were satisfied with WSDOT's performance.

Project Execution

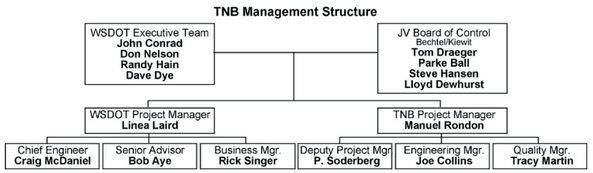
Quality Oversight

Traditionally, WSDOT staff perform quality control (QC) and quality assurance (QA) tests. In design-build contracts, the design-builder has the job of performing all QC and QA tests. WSDOT's responsibility is to monitor and audit those activities, as well as do Quality Verification (QV) tests. WSDOT hired Delcan Inc. to help develop a comprehensive project quality compliance audit system. The compliance audit system combines audits with materials testing and a verification process, and it focuses on two areas of audits: 1) construction auditing (assessment of TNC's construction quality management techniques and products); and 2) management system auditing (all other project requirements). This program was fully implemented in September 2003. Since then, audit findings indicate that TNC's design and construction work and management processes are proceeding in compliance with the design-build agreement. Additional effort is needed to ensure that environmental compliance is fully achieved.

Management Oversight

Strong executive leaders are key to ensuring that both TNC and WSDOT management teams are focused on delivering key project goals and objectives. WSDOT and TNC executives jointly attend quarterly meetings and project visits to follow progress and help resolve issues. WSDOT executives also meet monthly with project managers to provide oversight on project activities.

TNB Management Structure



Contingency Funds Committed

A design-build contract usually lowers the owner's (WSDOT's) risk and reduces project cost growth. There are both planned expenditures (not included in the design-build contract) and unplanned expenditures due to contract changes. Planned expenditures include right-of-way settlement costs and removal of contaminated soils. Unplanned changes include scope changes as a result of community requests, permits, and other WSDOT unanticipated project needs. In this project, a contingency budget was included to cover such expenditures. One of WSDOT's goals is to minimize additions to the project cost while at the same time being a good neighbor and addressing community concerns to the extent possible.

Some change orders actually reduce project scope, resulting in savings. For example, TNC asked to replace a retaining wall with a standard slope, resulting in a $62,500 savings.

The table below shows contingency funds committed as of December 31, 2003.

	Amount
Right-of-Way/Inter-Agency Settlements	$4,066,000
Planned/Known Change Orders	$1,045,578
Community Driven Change Orders	$221,303
Permit Driven Change Orders	$389,892
WSDOT Initiated Change Orders	$317,200
Design-Builder Initiated Change Orders	-$188,546
Total	**$5,851,159**